

CIPD

Productive --- **meetings**

An evidence review

Scientific summary
May 2023

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This report was written by Eric Barends and Denise Rousseau of the Center for Evidence-Based Management (CEBMa).

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1 Introduction

Rationale for this review

Workplace meetings are an important forum in which to exchange ideas and information, build consensus and set priorities, with the aim of achieving individual, group, and organisational objectives. As a result, managers and employees tend to spend a lot of their time in meetings and the popular literature tends to emphasise their negative aspects - for example, how meetings interrupt other tasks and are perceived by many employees as a waste of time. For these reasons, we undertook a rapid evidence assessment (REA) of the research literature to learn more about the factors that influence effectiveness of workplace meetings.

What is a rapid evidence assessment?

Conventional literature reviews offer an overview of the relevant scientific literature on a topic but their trustworthiness may be low. The criteria for inclusion of studies typically lack clarity and selection is often based on the researcher's personal preferences, bringing a risk of bias. For this reason, rapid evidence assessments (REAs) may be preferred. REAs use a specific research methodology to identify the most relevant studies on a specific topic as comprehensively as possible, and to select appropriate studies based on explicit criteria. Prior to inclusion, the methodological quality of the studies is independently assessed, again using explicit criteria. In contrast to a conventional literature review, an REA is transparent, verifiable and reproducible, significantly reducing the likelihood of bias.

Main question: What does the review answer?

What is known in the scientific literature about factors influencing the effectiveness of meetings?

Other issues raised, which will form the basis of our conclusion regarding the main question, are:

1. What is meeting effectiveness?
2. How can meeting effectiveness be measured?
3. What is the impact of meeting effectiveness on workplace outcomes?
4. What are the most important factors associated with the effectiveness of workplace meetings?
5. Are these factors different for face-to-face meetings and virtual ones?
6. Are there cross-cultural differences?

2 Methods

Search strategy: How was the research evidence sought?

The following databases were used to identify studies: ABI/INFORM Global from ProQuest, Business Source Premier from EBSCO, and PsycINFO from Ovid. The following generic search filters were applied during the search:

1. scholarly journals, peer-reviewed
2. published in 1980-2022 for meta-analyses, and 2010-2022 for primary studies
3. articles in English.

A search was conducted using terms such as 'meeting', 'effective', 'workplace' and 'office'. The reference lists in the retrieved studies were also screened to identify additional studies for possible inclusion. We conducted six different search queries, which yielded 618 studies. An overview of all search terms and queries is provided in Appendix 1.

Selection process: How were studies selected?

Study selection took place in two phases. First, the titles and abstracts of the 618 identified studies were screened for relevance. In case of doubt or lack of information, the study was included. Duplicate publications were removed. This first phase yielded 29 studies. Second, studies were selected based on the full text of the article, using these inclusion criteria:

- study type: a focus on quantitative, empirical studies
- measurement: only studies in which relationships between factors and meeting effectiveness were quantitatively measured
- outcome: only studies examining meeting effectiveness as an outcome
- context: a focus on studies relating to work settings.

In addition, the following exclusion criterion was applied:

- studies focusing on meetings that require a specific structure or follow a specific procedure, such as incident reviews.

This second phase yielded 18 studies and the reference lists yielded a further 12, giving a final study sample size of 30. An overview of the selection process is provided in Appendix 2.

Data extraction: What data was extracted?

Data extraction involves collation of the results of the studies included. From each one we extracted and interpreted information relevant to the review question, such as year of publication, research design, sample size, population (eg industry, type of employees), possible moderators or mediators, main findings, effect sizes and limitations. An overview of all studies included is given in Appendix 3, along with a list of excluded studies.

Critical appraisal

Often, it is possible to find a scientific study to support or refute a given theory or claim. It is therefore important to determine which studies are trustworthy (ie valid and reliable) and which are not. The trustworthiness of a scientific study is first determined by its methodological appropriateness. To determine this in respect of research design, the classification systems of Shadish et al (2002) and Petticrew and Roberts (2006) was used. For

methodological quality (eg adequate sample size and reliable measurement methods), all included studies were systematically assessed against explicit quality criteria. Finally, the effect sizes were identified. An effect (eg a correlation, Cohen’s d or odds ratio) can be statistically significant but not necessarily of practical relevance; even a trivial effect can be statistically significant if the sample size is big enough. For this reason, the effect size - a standard measure of the magnitude of the effect - was assessed. For a detailed explanation of how the quality of included studies was judged, see [CEBMA Guideline for Rapid Evidence Assessments in Management and Organisations \(Barends et al, 2017\)](#).

Table 1: Methodological appropriateness of study designs

Design	Level
Systematic review or meta-analysis of randomised controlled studies	AA
Systematic review or meta-analysis of controlled before-after studies	A
Randomised controlled study	
Systematic review or meta-analysis of non-controlled and/or before-after studies	B
Non-randomised controlled before-after study	
Interrupted time series	
Systematic review or meta-analysis of cross-sectional studies	C
Controlled study without a pre-test or uncontrolled study with a pre-test	
Cross-sectional study	D

Critical appraisal: What is the quality of the studies included?

This review identified 30 studies, of which 25 (mostly cross-sectional) studies were graded level D, indicating a low level of trustworthiness. Only five controlled and/or longitudinal studies were included. This indicates that the domain of workplace meeting effectiveness is well established but so far based on a body of rather low-quality research.

3 Main findings

Question 1: What is meeting effectiveness?

Most of the included studies define meeting effectiveness as the extent to which a meeting helps achieve the goals of meeting attendees and the organisation (see, for example, Allen et al, 2014). Meeting effectiveness, however, is first and foremost perceived effectiveness - the extent to which attendees feel that the aims and goals of the meeting were accomplished (Rogelberg et al, 2006). Perceived meeting effectiveness is closely related to 'meeting satisfaction', a positive affective state determined by the degree to which the meeting experience measures up to participant expectations (Pham and Bartels, 2021).

Question 2: How can team effectiveness be measured?

In most studies, perceived meeting effectiveness is assessed by asking participants to rate the effectiveness of the meeting in terms of:

- achieving their own work goals, those of their colleagues and those of the department
- providing an opportunity to acquire useful information
- providing an opportunity to meet, socialise or network with people.

A widely used measure is the five-point scale developed by Rogelberg et al (2006), with answers ranging, for example, from 1=strongly disagree, to 5=strongly agree.

Question 3: What is the impact of meeting effectiveness on workplace outcomes?

Several studies have found that attendees' perceptions of meeting effectiveness strongly affects their attendance, attitudes, behaviours, wellbeing and - consequently - the likelihood of the meeting's aims and goals being achieved (Rogelberg et al, 2006; Baran et al, 2012). Note, however, that effectiveness alone is not sufficient to yield positive outcomes. For example, only when a meeting was perceived by attendees as relevant were positive relations found with outcomes such as psychological meaningfulness (Allen et al, 2013), work engagement and task performance (Allen et al, 2021b). In addition, it was found that when managers allow employees to speak up and encourage them to express their thoughts and ideas, a strong association exists with psychological safety (Allen et al, 2013), work engagement (Yoerger, 2015) and leader-employee exchange (Baran et al, 2012).

Question 4: What are the most important factors associated with meeting effectiveness?

In recent decades, numerous empirical studies have identified several factors associated with perceived meeting effectiveness. Table 2 shows an overview of factors (variables) reported in the included studies, followed by short explanations of each.

Table 2: Methodological appropriateness of study designs

Variable	Effect sizes	Study
Meeting-leader behaviour	$r=.07$ to $.70$	Malouff, 2012; Baran, 2012; Odermatt, 2017
Goal clarity	$r=.51$ tot $.54$	Bang, 2010; Kauffeld, 2012
Focused communication	$r=.28$ to $.59$	Bang, 2010; Kauffeld, 2012
Positive humour, playful activities, small talk	$r=.39$ to $.43$	Pham, 2021; Kauffeld, 2012 Allen, 2014
Surface acting	$r=-.33$ to $-.38$	Shanock, 2013; Shumski, 2018
Meeting punctuality	$r=.19$ to $.32$;	Allen, 2012; Allen, 2013; Allen, 2021a; Baran, 2012; Cohen, 2011; Cionea, 2021; Leach, 2009; Rogelberg, 2014
Meeting facilities	$r=.11$ to $.32$	Cohen, 2011; Leach, 2009
Meeting frequency	$r=-.24$	Allen, 2021b; Yoerger, 2015; Luong, 2005
Formal agenda	$r=.14$ to $.18$	Cohen, 2011; Leach, 2009; Eisenbart, 2016
Meeting rules/procedure	$r=.14$	Cohen, 2011
Meeting size	ns to $-.11$	Leach, 2009; Cohen, 2011
Meeting duration	ns	Cohen, 2011; Leach, 2009; Luong, 2005

Meeting-leader behaviour

Several researchers have noted the connection between the actions and behaviours of the person leading the meeting and its effectiveness. Indeed, many of the studies included in this review report strong relationships with variables that are under the control of the meeting's leader. For example, a display of fairness from the leader (eg sharing relevant information, explaining and following procedures, providing opportunities to ask questions or share ideas) was shown to have a strong relationship with how attendees judge meeting effectiveness (Baran et al, 2012). The same was found for meeting leaders who are perceived as considerate (Odermatt et al, 2017). In addition, leader behaviour such as arriving before the start of the meeting, avoiding monologues or long-winded speeches, encouraging participation, paraphrasing attendee comments, and summarising the decisions made at the end of the meeting have all been shown to affect attendee ratings of meeting

effectiveness (Malouff et al, 2012). Other leader-influenced variables that have a strong relationship with effectiveness are discussed below.

Goal clarity

Goal clarity refers to the degree to which attendees understand why the topics on the agenda are important, and what the meeting leader wants to achieve by discussing them. Prior research indicates that a strong positive relationship exists between specific, challenging goals and performance outcomes, both for individuals and for groups; for a review of the research, see CEBMa's evidence review on Goal Setting (Barends et al, 2016). Not surprisingly, it was found that clear meeting goals are also associated with performance outcomes such as meeting and team effectiveness (Bang et al, 2010; Kauffeld and Lehmann-Willenbrock, 2012).

Focused communication

Focused communication refers to the degree to which attendees stick to the issues during a meeting - that is, whether they avoid digression and stay focused on the topics at hand and/or the goals of the meeting. It was found that when discussions stay on topic, meetings are more likely to be perceived as effective (Bang et al, 2010) and associated with positive organisational outcomes (Kauffeld and Lehmann-Willenbrock, 2012).

Positive humour, playful activities, pre-meeting small talk

Surveys among employees who frequently attend workplace meetings suggest that many find them unproductive, boring and a waste of time (Allen et al, 2012; Perlow et al, 2017). Several studies found that lightening the atmosphere through positive humour and playful activities such as icebreakers, pre-meeting small talk, and mid-meeting re-energisers are associated with increased effectiveness and satisfaction (Kauffeld and Lehmann-Willenbrock, 2012; Pham and Bartels, 2021). Positive humour makes people feel connected and produces positive emotions, whereas negative humour is perceived as emotionally harmful, aggressive or humiliating. Icebreaker activities or games are intended to facilitate exchanges between attendees, increase trust and psychological safety, and help new attendees to initiate interactions with each other (Pham and Bartels, 2021). In addition, small talk prior to the start of a scheduled meeting was found to be a predictor of meeting effectiveness (Allen et al, 2014). Re-energisers can be used during a meeting to clear the mind and re-engage attendees; an example would be for attendees to describe a bumper sticker based on what they had learned from the meeting so far (Chlup and Collins, 2010).

Surface acting

Surface acting is defined as “faking the appropriate emotion to fit the context” (Hochschild, 1983). When attendees choose to surface act, they are expressing an inauthentic emotion inconsistent with their internal emotional state, such as acting pleasantly to others even when they disagree, or smiling despite being angry about a decision being made (Shanock et

al, 2013). Although research suggests surface acting is common in workplace meetings, it is more likely to occur when higher-status attendees are present (Nyquist et al, 2018; Shumski Thomas et al, 2018). Surface acting is negatively related to perceptions of meeting effectiveness and psychological safety and positively related to emotional exhaustion (Shanock et al, 2013; Shumski Thomas et al, 2018). A possible explanation for this finding is that engaging in surface acting takes resources away from goal-directed behaviour (eg networking with others or gaining information helpful to their job). In addition, the tension between emotions felt and emotions expressed demands effort and may drain mental resources (Shanock et al, 2013). However, these associations are small to moderate.

Meeting punctuality

Several studies examine the effect of meeting punctuality - starting and ending on time. The effect of meeting lateness - where a meeting begins after the planned starting time because one or more attendees arrive late - is widely examined. Although late arrival is considered a mild form of withdrawal behaviour and is often viewed as a relatively acceptable social behaviour, several studies demonstrate that it is linked to:

- reduced meeting effectiveness (Leach et al, 2009), meeting satisfaction (Allen et al, 2012; Cohen et al, 2011) and psychological safety (Allen et al, 2013)
- counterproductive work behaviour, and reduced group cohesion and co-worker trust (Allen et al, 2021a)
- reduced job satisfaction, and greater feelings of disrespect and intentions to quit (Rogelberg et al, 2014).

In addition, it was found that negative feelings of attendees towards latecomers, such as anger and antipathy, increase when the meeting is considered important and/or when the latecomer has a controllable excuse. Surprisingly, meeting load/frequency and job level were not associated with lateness, whereas age and conscientiousness showed a small negative relationship (Rogelberg et al, 2014).

Meeting facilities

Having appropriate meeting facilities was found to be related to perceived meeting effectiveness (Leach et al, 2009). In particular, an appropriate space, refreshments, a comfortable temperature and appropriate lighting showed small to moderate associations with effectiveness (Cohen et al, 2011). No relationships were found with table shape or seating arrangements.

Meeting load: Frequency, duration, size

Several studies found meeting frequency to be negatively associated with meeting effectiveness and meeting satisfaction (Allen et al, 2021c) and employee wellbeing (Luong and Rogelberg, 2005). However, no association was found with meeting duration (Cohen et al, 2011; Leach et al, 2009) or time spent in meetings (Luong and Rogelberg, 2005). These findings are consistent with the research literature on interruptions (see, for example,

Zijlstra et al, 1999), suggesting it is the frequency of interruptions rather than the amount of time they consume that leads to negative consequences. In addition, little or no association was found between meeting size and effectiveness (Cohen et al, 2011; Leach et al, 2009).

Meeting procedure, agenda

Finally, although the popular literature emphasises the importance of meeting rules/procedures and the advance distribution of a formal agenda, only small correlations between these and perceived meeting effectiveness were found (Cohen et al, 2011; Eisenbart et al, 2016; Leach et al, 2009).

Question 5: Are there cross-cultural differences?

Several studies included in this review involved settings in different countries (see, for example, Lehmann et al, 2014). Although there is some evidence suggesting non-Western countries have more lenient norms regarding lateness (van Eerde and Azar, 2020), most findings suggest that worker perceptions of meeting effectiveness may have more commonalities than differences across cultures (see, for example, Allen et al, 2021b).

Question 6: Are these factors different for face-to-face meetings and virtual ones?

In the past decade, there has been wide adoption of video meetings as a workplace tool. It is expected, partly due to the COVID-19 pandemic, that a substantial number of workplace meetings will continue to be remote well into the future. Despite this surge in the number of online meetings, there is limited research on the extent to which the factors covered in this review apply in a virtual context. In fact, almost no studies present a direct comparison between in-person and virtual workplaces. In addition, most studies were conducted 10 or more years ago and so have technological and sociological settings very different from those in today's workplace. This review identified only one recent (cross-sectional) study in which factors associated with effective virtual meetings were explored (Kreamer, 2021). Its findings suggest a positive relationship between perceived meeting effectiveness and a meeting leader's virtual meeting skills, most of which include factors covered above. It was also proposed that specific icebreakers/re-energisers might be suited to online meetings, such as attendees posting and responding to interesting quotes (Chlup and Collins, 2010). More research is available on the attributes of effective virtual teams - an overview of the relevant scientific literature is provided in the CIPD's evidence review on the attributes of effective virtual teams (Barends et al, 2020).

4 Conclusion

Meeting effectiveness has been widely studied, yet the available evidence is rather low in quantity and quality. There are as yet no meta-analyses and most studies are cross-sectional in nature. Nevertheless, those included in this review identify several variables that have moderate to strong correlation with employees' perception of meeting effectiveness, and that provide a low-cost/low-risk starting point for interventions to increase the effectiveness of workplace meetings. These include leader behaviour, goal clarity, focused communication, a positive climate and punctuality.

Limitations

This REA aims to provide a balanced assessment of what is known in the scientific literature about factors that influence the effectiveness of workplace meetings by using the systematic review method to search and critically appraise empirical studies. However, in order to be 'rapid', concessions were made in relation to the breadth and depth of the search process, such as the exclusion of unpublished studies, the use of a limited number of databases and a focus on empirical research published in the past 12 years. As a consequence, some relevant studies may have been missed.

A second limitation concerns the critical appraisal of the studies included, which did not incorporate a comprehensive review of the psychometric properties of their tests, scales, and questionnaires.

Given these limitations, care must be taken not to present the findings of this REA as conclusive.

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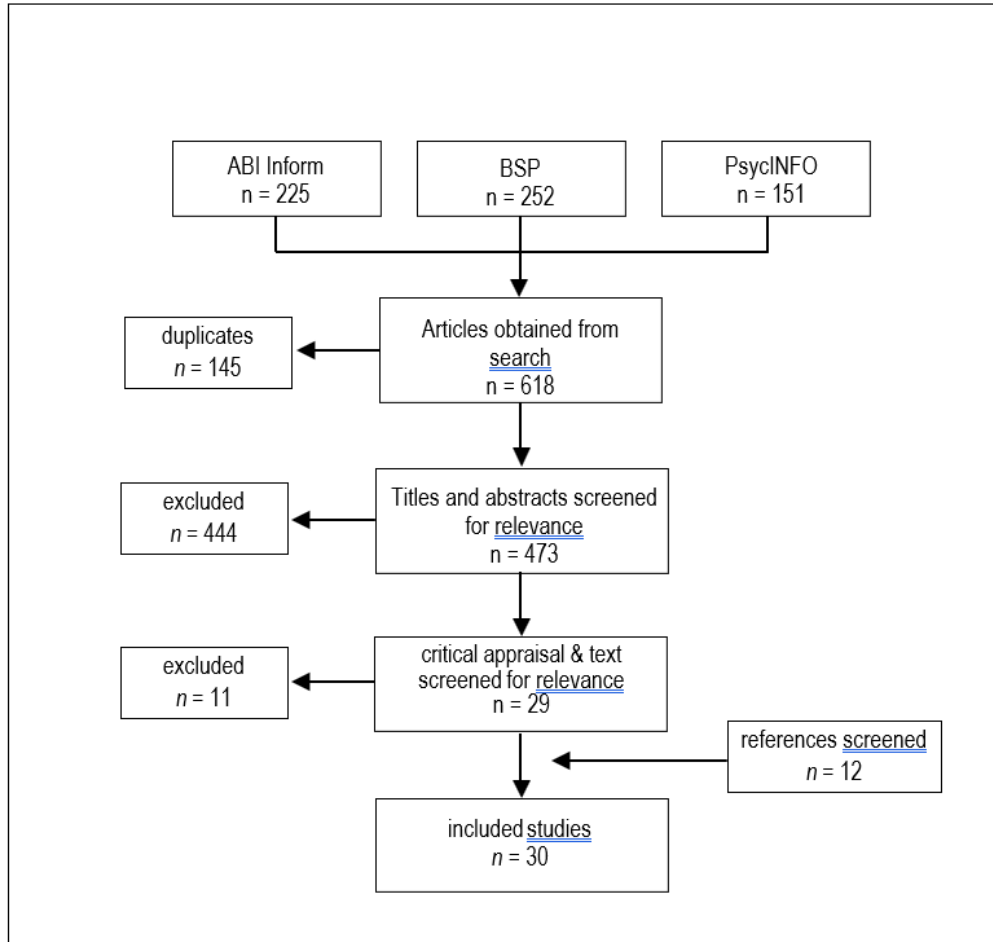
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Appendix 1: Overview of search terms and hits

ABI/Inform Global, Business Source Elite, PsycINFO peer reviewed, scholarly journals, Aug 2022			
Search terms	ABI	BSP	PSY
S1: TI(effective*) AND TI(meeting*) OR AB("effective meeting*")	103	86	60
S2: TI(work*) AND TI(meeting*)	107	109	170
S3: TI(lead*) AND TI(meeting*)	25	66	46
S4: TI("group meeting*") OR TI("business meeting*")	91	129	173
S5: TI(meeting*) AND TI(office)	11	17	7
S6: TI(meeting*) AND TI(skills)	16	12	8
S6: S1 OR ... S5, limit > 2000 *filter empirical studies	225	252	151*

Appendix 2: Selection of studies for review



Appendix 3: Appraisal of selected studies

1st author and year	Design and sample size	Sector/population	Main findings	Effect sizes	Limitations	Level
1. Allen, 2012	cross-sectional survey n1=120 n2=126 n3=402	Study 1 & 2: working adults in the US Study 3: internet-based sample	<ol style="list-style-type: none"> 1. 10% of respondents stated that meetings make them feel better about their job. In contrast, 30% of respondents felt worse about their job because of more meetings. 2. Within the group who felt better about having more meetings, the majority, 35%, reported that meetings allow for more information-sharing. In this group, 25% said that meetings help them reach goals and objectives, while 17% said meetings allow for collaboration, bringing people together to solve problems and enable communication. 3. For the group who felt worse about having more meetings, their largest complaint was related to time. Only a small percentage, 6%, of individuals mentioned meetings as negatively interrupting their work day. A much greater proportion of the 'worse' group indicated that meetings constrain their time (41%) or are a waste of time (13%). 4. The respondents indicated that meetings are more dreadful when lateness is an issue (12%) and when the meeting lacks structure or organisation (12%). The group who feels better about having more meetings dreads meetings the most when they or others arrive late (39%). 5. The largest proportion of respondents indicated that they look forward to meetings when the information shared is relevant to them (19%). Similarly, 16% look forward to meetings when they are productive. 	only frequencies are reported	Mainly descriptive study Convenience sample	D

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<p>2. Allen, 2013</p>	<p>cross-sectional survey (2-wave time lag) n=319</p>	<p>working adults (alumni of a large university in the southeast United States)</p>	<ol style="list-style-type: none"> 1. Meeting relevance is positively related to (a) psychological meaningfulness, but NOT to (b) psychological safety, and (c) psychological availability. 2. Voice in meetings is positively related to psychological safety (b), but NOT to (a) psychological meaningfulness and (c) psychological availability. 3. Meeting time management is positively related to (a) psychological meaningfulness, (b) psychological safety, and (c) psychological availability. 4. The three conditions of (a) psychological meaningfulness, (b) psychological safety, and (c) psychological availability are positively related to employee engagement.* 5. The three conditions of (a) psychological meaningfulness, (b) psychological safety, and (c) psychological availability mediate the relationship between manager usage/facilitation of meetings (ie meeting relevance, voice, and meeting time management) and overall employee engagement at work - controlling for satisfaction with supervisor, work satisfaction and meeting load.** <p>Thus, if managers (1) make their workgroup meetings relevant, (2) allow for employee voice in their meetings where possible, and (3) manage the meeting from a time perspective, employees appear more poised to fully engage themselves in their work.</p> <p>*a positive, fulfilling, work-related state of mind characterised by vigour, dedication, and absorption (see limitations) ** except for the effect of meeting time management on employee engagement through psychological availability</p>	<p>1a. $r=.32$; $B=.23$ 1b. $r=.42$; $B=ns$ 1c. $r=ns$; $B=ns$</p> <p>2a $r=.26$; $B=ns$ 2b $r=.56$; $B=.64$ 2c $r=.11$; $B=ns$</p> <p>3a $r=.31$; $B=.24$ 3b $r=.40$; $B=.19$ 3c $r=.18$; $B=.25$</p> <p>4a $r=.74$; $B=.76$ 4b $r=.42$; $B=.24$ 4c $r=.32$; $B=.16$</p> <p>5. See Fig 1 and Table 5 for standardised path coefficients</p>	<p>- Relatively low response rate (4 to 8%), but checked for non-response bias</p> <p>Note: Employee engagement was measured with the Utrecht Work Engagement Scale</p>	<p>D+</p>
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<p>3. Allen, 2014</p>	<p>cross-sectional survey n=252</p>	<p>working adults (online panel of internet-based workers employed by a variety of organisations throughout the USA)</p>	<ol style="list-style-type: none"> 1. Pre-meeting small talk positively relates to perceived meeting effectiveness. 2. Pre-meeting small talk is positively related to meeting effectiveness even after controlling for good within meeting procedures (ie open communication, task-oriented focus, systematic approach, and timeliness). 3. Extraversion moderates the relationship between pre-meeting talk and meeting effectiveness, such that the relationship will be stronger for meeting attendees with low extraversion. <p>Thus managers should encourage their employees to arrive in time to participate in pre-meeting small talk. Side conversations before a scheduled meeting starts can have beneficial effects for meeting outcomes and should be fostered.</p> <p>Note 1: all findings controlled for organisational tenure, age, and job level. Note 2: good meeting procedures accounted for 42% of the variance in meeting effectiveness</p>	<ol style="list-style-type: none"> 1. $r=.28$, $B=.25$ 2. $B=-.19$ 	<p>scale for pre-meeting talk was novel</p> <p>pre-meeting variables were retrospectively measured</p>	<p>D</p>
<p>4. Allen, 2021a</p>	<p>cross-sectional survey n=1,018</p>	<p>working adults from China, Germany, Italy, the Netherlands, and the United States</p>	<ol style="list-style-type: none"> 1. Workplace meeting lateness is positively related to counterproductive meeting behaviours across cultures. 2. Workplace meeting lateness is negatively related to meeting effectiveness across cultures. 3. Meeting lateness is negatively related to both group (a) cohesion and (b) co-worker trust across cultures. <p>Note: findings were controlled for meeting size.</p>	<p>all correlations are very small, between .01 and .2, the Italian sample showed moderate effect sizes on cohesion (-.26) and effectiveness (-.28), the Dutch sample showed effect sizes close to zero</p>	<p>meeting effectiveness concerns perceived effectiveness</p>	<p>D</p>

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<p>5. Allen, 2021b</p>	<p>cross-sectional survey (3-wave 1 week time lag) n=117</p>	<p>white-collar Chinese workers from four companies across industries</p>	<ol style="list-style-type: none"> 1. Perceptions of meeting effectiveness are positively associated with work engagement. 2. Work engagement is positively associated with task performance. 3. Work engagement fully mediates the relationship between meeting effectiveness and task performance. 4. Meeting size moderates the mediation from meeting effectiveness to task performance via work engagement such that the mediated relationship is stronger for smaller-sized (=3 participants or fewer) meetings. 	<p>1. $r=.44$ 2. $r=.44$</p>	<p>convenience sample performance concerns end-of-day performance</p>	<p>D+</p>
<p>6. Allen, 2021c</p>	<p>cross-sectional survey n=205</p>	<p>active volunteers in the US who reported having volunteer meetings</p>	<ol style="list-style-type: none"> 1. Meeting effectiveness is positively associated with volunteer engagement 2. Meeting satisfaction is positively associated with volunteer engagement. 3. Meeting frequency is negatively associated with (a) meeting satisfaction and (b) meeting effectiveness. 4. The degree to which volunteers perceive that they have voice partially mediates the relationship between meeting effectiveness and engagement. 5. The degree to which volunteers perceive that they have voice fully mediates the relationship between meeting satisfaction and engagement. <p>Note: engagement concerns work engagement, measured with the Utrecht Work Engagement Scale (UWES).</p>	<p>1. $r=.56$ 2. $r=.53$ 3a. $r=-.24$ 3b. $r=-.30$</p>	<p>convenience sample</p>	<p>D</p>

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<p>7. Bang, 2010</p>	<p>cross-sectional study n=8 top management groups, average size 7.6 people</p>	<p>Norwegian managers participating in top management group meetings, public sector</p>	<ol style="list-style-type: none"> 1. There is a positive relationship between goal clarity* and team effectiveness (a. focused communication, b. observer-rated task performance, c. member-rated task performance, d. relationship quality, e. member satisfaction) in management meetings. 2. There is a positive relationship between focused communication and team effectiveness (a. observer-rated task performance, b. member-rated task performance, c. relationship quality, d. member satisfaction) in management meetings. 3. The association between goal clarity and team effectiveness is partially mediated through focused communication. <p>Thus, the study supports prior research about the importance of having clear goals, speaking up when the goal is experienced as unclear, and being focused when working in a group.</p>	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> a. $r=.65$ b. $r=.30$ c. $r=.54$ d. $r=.40$ e. $r=.52$ 2. <ol style="list-style-type: none"> a. $r=.38$ b. $r=.60$ c. $r=.52$ d. $r=.32$ 	<p>convenience sample - self-selection, risk of selection bias</p> <p>self-report with mostly newly developed scales, additional assessment by independent raters Baron and Kenny's procedure for examining mediator effects were used</p>	<p>D</p>
<p>8. Baran, 2012</p>	<p>cross-sectional survey n=291</p>	<p>working adults in the US recruited using a third party</p>	<ol style="list-style-type: none"> 1. Interactional justice displayed by supervisors in supervisor-led meetings positively relates to leader-member exchange quality. 2. Specific good meeting practices* in supervisor-led meetings positively relate to leader-member exchange quality. 3. Leader-member exchange mediates the relationship between interactional justice displayed by supervisors in meetings and perceived organisational support. 4. Leader-member exchange mediates the relationship between good meeting practices and perceived organisational support. 5. Leader-member exchange mediates the relationship between interactional justice displayed by supervisors in meetings and meeting citizenship behaviours. 6. Leader-member exchange mediates the relationship between good meeting practices and meeting citizenship behaviours. 	<ol style="list-style-type: none"> 1. $r=.70$ 2. $r=.60$ <p>For SEM model with path coefficients, see Fig 1</p>	<p>The (composite) construct of 'good meeting practices' is ill defined.</p>	<p>D</p>

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			<p>* composite measure based on a 10-item scale, includes timeliness, available time, voice, agenda, perceived relevance.</p> <p>Note: see practical implications.</p>			
9. Cionea, 2021	cross-sectional survey n=217	working adults in the US (Amazon Mechanical Turk)	1. Satisfaction with the meeting process was positively associated with the supervisor's negotiation dialogue orientation, but no relevant differences between the three different types of orientation were reported.	all betas between .23 and .26	Explorative study, subjective measurements reliant on participants' memory	D-

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<p>10. Cohen, 2011</p>	<p>cross-sectional survey n=367</p>	<p>working adults from a wide range of sectors recruited through a third party</p>	<ol style="list-style-type: none"> 1. Temporal design characteristics: Meetings that (a) start and end on time are perceived more favourably than (b) those that do not. Meeting length and break use were unrelated to perceptions of meeting quality (PMQ). 2. Physical design characteristics: Meetings that take place in (a) an appropriate space, (b) with refreshments, (c) comfortable temperature, (d) appropriate lighting were related to PMQ. No significant relations were found for meeting space arrangements (eg table shape), modality, noise and seating arrangement. 3. Procedural design characteristics: use of (a) meeting rules and a (b) formal agenda positively correlates with PMQ (but only when the agenda was accessible prior to the meeting). 4. Attendee design characteristics: the total number of attendees correlates negatively with PMQ, with larger meetings seen as having lower quality. The use of a facilitator was not associated with PMQ 	<p>1a r=.29 1b r=.16 2a r=.29 2b r=.11 2c r=.17 2d r=.25 3a r=.14 3b r=.14 4 r=-.11</p>	<p>individuals who considered themselves to be meeting facilitators reported significantly greater PMQ than those who did not</p>	<p>D</p>
<p>11. Eisenbart, 2016</p>	<p>case study/cross-sectional survey with 1-year follow-up n=24</p>	<p>managers at a hospital in Rome, Italy</p>	<ol style="list-style-type: none"> 1. Findings suggest that a scheduled meeting with a shared agenda of all decisions to be taken may induce decision-makers to form opinions up front at the meeting, with these opinions eventually serving as sources of conflict during group discussion. 	<p>not reported</p>	<p>very limited, non-random and specific sample, limited generalisability</p>	<p>D</p>
<p>12. Guo, 2010</p>	<p>longitudinal study (3 months) n=58 groups, group size varied from 3 to 5 members</p>	<p>undergraduate students</p>	<ol style="list-style-type: none"> 1. There is a positive association between group cohesion and group similarity of media preferences. 2. The more similar group media preferences, the more successful group meetings. 3. The relationship between group cohesion and group similarity of media preferences grows stronger over time. 4. The relationship between group similarity of media preference and group meeting success grows stronger over time. 	<p>unclear</p>	<p>small groups student sample possibly outdated</p>	<p>C</p>

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<p>13. Johnson, 2022</p>	<p>cross-sectional survey n=345</p>	<p>US workers from 26 different industries</p>	<ol style="list-style-type: none"> 1. Video meeting load (a) and video meeting time beyond sufficiency for one's job (b) are positively correlated with emotional exhaustion. 2. The more useful workers find video meetings, the lower their emotional exhaustion. 	<p>1a. $r=.14$; $B.13$ 1b. $r=.43$; $B.23$ 2. $r=-.29$; $B.-.09$</p>	<p>study was conducted during start of COVID pandemic</p>	<p>D</p>
<p>14. Kauffeld, 2012</p>	<p>cross-sectional survey, in-vivo observations and post-test (2.5 years) n=92 team meetings</p>	<p>teams from 20 medium-sized organisations from the (German?) automotive supply, metal, electrical, chemical and packaging industries</p>	<ol style="list-style-type: none"> 1. Problem-focused communication is positively linked to team meeting success. 2. Positive procedural statements (a) are positively linked to team success and negative procedural statements (b) are negatively linked to team success. 3. Positive socioemotional statements (a) are NOT positively linked to team success and negative socioemotional statements (b) are negatively linked to team success. 4. Proactive statements (a) are positively linked to team success and counteractive statements (b) are negatively linked to team success. 	<p>1. Correlations with meeting satisfaction varied from .28 to .37; correlations with team productivity varied from .33 to .51; correlations with org success varied from .41 to .59 2a. meet sat $r=.43$ prod $r=ns$ org succ $r=.51$ 2b. meet sat $r=-.54$ prod $r=-.39$ org succ $r=-.46$ 3a. meet sat $r=-.33$ prod $r=ns$ org succ $r=-ns$ 3b meet sat $r=-.25$ prod $r=?$ org succ $r=-.31$ 4a meet sat $r=.30$ prod $r=.40$ org succ $r=.43$</p>	<p>Team productivity data was provided by the management. Organisational success data was provided by the CEOs.</p>	<p>C</p>

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				4b meet sat $r=-.42$ prod $r=?$ org succ $r=-.52$		
15. Kennedy, 2010	RCT (lab simulation) n=294, 98 teams of three	undergraduate US business students	<ol style="list-style-type: none"> 1. Computer-mediated teams report a lower level of participative decision-making and a higher level of conflict than face-to-face teams after the first session. 2. Teams improve their participative decision-making and conflict processes from after the first session to after the second. 3. Pure computer-mediated teams will report a lower level of participative decision-making after the second session than pure face-to-face teams. 4. Pure computer-mediated teams will report a lower level of satisfaction and attain worse task performance after the second session than pure face-to-face teams. 	not reported but appear to be small (see intercorrelations table 1)	student sample in artificial setting small teams possibly outdated	A

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<p>16. Kreamer, 2021</p>	<p>cross-sectional survey n=270</p>	<p>employees of a Norwegian startup company and international teams, mostly from US and Europe</p>	<ol style="list-style-type: none"> 1. Results revealed there was a significant positive relationship between employees' perceptions of their leaders' virtual meeting skills and their ratings of overall meeting effectiveness. 2. Skills mentioned by participants: 1. thoughtful preparation (eg having a clear, concise, pre-shared agenda and meeting goal, and a carefully considered attendee list), 2. assign roles (eg having a colleague help with logistics, letting in participants, running chat, taking notes), 3. leverage technological tools (eg use of online resources like whiteboards, polls, co-editing charts), 4. set expectations and rules (eg ensuring everyone is remote on their own computer with headphones, setting expectations for muting and sharing video, not allowing multiple people on one device), 5. incorporate personal connection (eg spending some time just talking to employees as people - ask how they're doing and try to understand their challenges and struggles), 6. actively facilitate (eg ensuring full engagement, asking to hear from those who are quiet, focusing on the goals of the meeting, and maintaining an appropriate level of professional and personal courtesy throughout), 7. end with clarity (name actions required specifically attributing ownership, timelines and alignment to larger priorities) 	<p>1. $r=.36$</p>	<p>survey was distributed in the midst of the COVID pandemic</p>	<p>D</p>
<p>17. Leach, 2009</p>	<p>Study 1 cross-sectional survey n=958 Study 2 n=292</p>	<p>adult workers from the UK, US and Australia from a wide range of industries</p>	<ol style="list-style-type: none"> 1. The following five design characteristics each have a positive relationship with perceived meeting effectiveness: (a) using an agenda (written in advance, verbal at meeting, agenda completion), (b) keeping minutes, (c) punctuality (starting and ending on time), (d) having appropriate meeting facilities, € having a chairperson/leader. 2. Attendee involvement mediates the relationship between these five design characteristics and perceived meeting effectiveness. 3. There was no significant relationship between meeting size or meeting duration and perceptions of effectiveness. No curvilinear relationships were found. 	<p>1a writ $r=.18$; $\beta=.28$ 1a verb $r=.16$; $\beta=.18$ 1a compl $\beta=.31$ 1b $r=.08$ 1c start $r=.28$ 1c end $r=.32$; $\beta.10$ d $r=.32$; $\beta=.30$ e $r=.06$; $\beta=.24$ $r's=S1$ $\beta's=S2$</p>	<p>convenience sample/self-select Mediation effect based on Baron and Kenny's guidelines</p>	<p>D</p>

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<p>18. Lehmann 2014</p>	<p>Qualitative study with quantitative analyses of observations (frequencies) n=30 team meetings</p>	<p>students from a university in Germany and the US</p>	<ol style="list-style-type: none"> 1. The frequency of problem-focused communicative behaviours is higher in German than in US team meetings. 2. The frequency of solution-focused communicative behaviours is higher in US than in German team meetings. 3. German team meetings are characterised by more procedural communicative behaviours than US team meetings. 4. US-American team meetings are characterised by significantly more positive socioemotional behaviours than German team meetings. 5. The frequency of counteractive behaviours is higher in German team meetings than in US-American team meetings. 	<p>only frequencies are reported</p>	<p>student sample</p>	<p>na</p>
<p>19. Luong, 2005</p>	<p>Longitudinal study (5 days of measurement) n=37</p>	<p>full-time US employees working in a university-based setting</p>	<ol style="list-style-type: none"> 1. Meeting frequency is negatively related to the daily wellbeing of employees. 2. The time spent in meetings is NOT negatively related to the daily wellbeing of the employee. 3. Meeting frequency and time spent in meetings is NOT related to feelings of productivity. <p>Note: findings are consistent with the research literature on interruptions (eg Zijlstra et al, 1999): it is the frequency of interruptions and not the amount of time they consume that leads to negative consequences.</p>	<p>1. fatigue r=.42 subj workload r=.31</p> <p>2. ns</p> <p>3. ns</p>	<p>note: outcome concerns 'daily' wellbeing</p>	<p>C</p>
<p>20. Malouff, 2012</p>	<p>cross-sectional study (survey and blind rating) n=60 meetings, 401 attendees</p>	<p>workers and leaders from organisations in New South Wales, Australia</p>	<ol style="list-style-type: none"> 1. See Table 2 for an overview of all 19 meeting-leader behaviours. The behaviours that showed the largest associations were (a) arrives before start of meeting; (b) speaks succinctly; (c) moves meeting along; (d) encourages participation; (e) encourages decision-making; (f) paraphrases comments of members; (g) says something positive about some aspect of the future of the organisation; (h) smiles more than once; (i) at the end of the meeting, summarises the decisions made. 2. Behaviours that showed low or non-significant correlations: distributes meeting agenda; distributes meeting agenda before meeting; greets members individually or as a group; starts on time; follows agenda; compliments members; thanks all members for something 	<p>1a. S r=.18 ns; P r=.23 1b. S r=.19 ns P r=.25 1c. S r=.22 P r=.27 1d. S r=.33 P r=.33 1e. S r=.32 P r=.30 1f. S r=.25 P r=.19 ns 1g. S r=.26 P r=.18 ns 1h. S r=.18ns</p>	<p>convenience sample</p>	<p>D</p>

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			specific; asks more than one open-ended question; says or does something interesting or entertaining.	P r=.25 1i. S r=.27 P r=.28 S=meeting satisfaction P=perceived meeting productivity		
21. Mrozz, 2017	RCT (experimental vignette study) n=299	working adults in the US recruited through Amazon's Mechanical Turk	<ol style="list-style-type: none"> 1. Meeting lateness directly affects (a) anger and (b) sympathy outside of judgements of responsibility, such that greater lateness is associated with greater anger and less sympathy. 2. Responsibility (=controllable excuse) is positively related to anger (a) and negatively related to sympathy (b).* 3. The importance of the meeting moderates the relation between meeting lateness and anger, such that the relationship is stronger when importance/relevance is high compared with low. 4. The importance of the meeting moderates the relation between meeting lateness and sympathy, such that the relationship is stronger when importance/relevance is high compared with low. 5. Anger is negatively related to the observer's attitude towards the late arrival (a), and sympathy (b) is positively related to the observer's attitude towards the late arrival. <p>*Participants reported greater anger and a willingness to punish the late arrival who gave a controllable excuse, whereas sympathy and prosocial intentions followed the late arrival who gave an uncontrollable excuse.</p> <p>Thus, arriving late to workplace meetings can have negative effects on interpersonal relationships, despite the prevalence of the behaviour. Organisations and managers should encourage all meeting attendees to arrive to meetings on time - this avoids the negative effects of lateness and also sets the stage for positive meeting interactions.</p>	<p>1a. r=.33 1b. r=-.03 ns</p> <p>2a. r=.36 2b. r=-.50</p> <p>5a. r=-.62 5b. r=.84</p>	artificial setting	A

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22. Nyquist, 2018	cross-sectional survey n=218	working adults from various industries recruited through a third party (StudyResponse)	<p>1. Hierarchical distance in meetings is positively related to (a) surface acting but NOT to (b) deep acting.</p> <p>Emotional labour: the process employees go through to present behaviours desired by the organisation, including during intra-organisational interactions such as meetings.</p> <p>Surface acting: faking an emotion that is not true for the individual.</p> <p>Deep acting: amending one's internal feelings to match the emotions required for the setting.</p> <p>Findings were controlled for positive and negative affectivity.</p>	1a r=.23 1b r=-.01 ns	participants of virtual meetings were excluded	D
23. Odermatt 2017	cross-sectional survey n=63 teams, 359 participants	Swiss adult workers from various industries	<p>1. Participants report greater meeting satisfaction when the meeting leader is perceived as a considerate supervisor.</p>	1 r=.45	no serious limitations	D
24. Pham, 2021	cross-sectional survey n=143	working adults in the US recruited through Amazon's Mechanical Turk	<p>1. Positive humour is positively related to employees' perceptions of (a) meeting effectiveness and (b) meeting satisfaction.</p> <p>2. Negative in-group humour is positively related to employees' perceptions of (a) meeting effectiveness but NOT to (b) meeting satisfaction.</p> <p>3. Negative out-group humour is negatively related to employees' perceptions of (a) meeting effectiveness and (b) meeting satisfaction.</p> <p>4. Meetings that have playful activities such as icebreakers and re-energisers will have a higher (a) effectiveness rating and (b) satisfaction rating than those that do not contain playful activities.</p>	<p>1a. r=.43; β=.39 1b. r=.48; β=.40</p> <p>2a. r=.09; β=.30 2b. r=.05 ns; β=.20 ns</p> <p>3a. r=-.07 ns; β=-.46, 3b. r=-.09 ns; β=-.46</p> <p>4a. r=.39; β=.22 4b. r=.43; β=.30</p>	no serious limitations	D

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<p>25. Rogelberg, 2006</p>	<p>cross-sectional survey n1=676 n2=304</p>	<p>adult workers from the US, UK, and Australia</p>	<ol style="list-style-type: none"> 1. Task interdependence not related to perceived meeting effectiveness. 2. Task interdependence moderates the relationship between meeting time demands and job attitudes and wellbeing (JAWB). For employees in low interdependent jobs, meeting time demands are negatively related to JAWB. In high interdependent jobs, there is a positive relationship between meeting time demands and JAWB. 3. Perceived meeting effectiveness does NOT moderate the relationship between meeting time demands and JAWB. 4. Perceived meeting effectiveness is positively related to JAWB. <p>JAWB: feelings about the job, overall satisfaction, intentions to quit, anxiety-comfort, depression-enthusiasm.</p>	<p>1. r=ns 4. accomplishment striving r=.20 anxiety-comfort r=.35 depression-enthusiasm r=.54 intention to quit r=-.32</p>	<p>convenience sample</p>	<p>D</p>
<p>26. Rogelberg, 2014</p>	<p>cross-sectional survey n=195</p>	<p>adult workers from southeastern United States</p>	<ol style="list-style-type: none"> 1. Employee job satisfaction (a) and meeting satisfaction (b) are negatively related to individual lateness to meetings. Intentions to quit (c) are positively related to individual lateness to meetings. 2. Conscientiousness (a) and age (b) are negatively related to individual lateness to meetings. 3. Meeting load (a) and job level (b) are NOT related to individual lateness to meetings. 4. The majority of respondents indicated a range of negative personal responses to lateness (eg feeling disrespected, being upset, feeling frustrated, seeing the late individual as rude, and being disappointed). 	<p>1a. r=-.24 1b. r=-.16 1c. r=.25 2a. r=-.28 2b. r=-.19 3a. r=.03 ns 3b. r=.05 ns</p>	<p>convenience sample</p>	<p>D</p>

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<p>27. Shanock, 2013</p>	<p>cross-sectional survey (2-wave 3-month time lag) n=178</p>	<p>Working adults in the US from various industries recruited through a third party (StudyResponse)</p>	<ol style="list-style-type: none"> 1. Surface acting in meetings at work is negatively related to perceived effectiveness of meetings at work. 2. Surface acting in meetings at work is positively related to emotional exhaustion. 3. Perceived meeting effectiveness partially mediates the relationship between surface acting in meetings and future emotional exhaustion. 4. Surface acting in meetings at work is positively related to intent to quit. 5. Perceived meeting effectiveness partially mediates the relationship between surface acting in meetings and intent to quit. <p>Thus, organisations wishing to increase the perceived effectiveness of their meetings can work to reduce the degree to which employees feel they have to express inauthentic emotion in meetings. In turn, expressing inauthentic emotion in meetings related to employees' future emotional exhaustion and intent to leave the organisation.</p>	<p>1. $r = -.33$ 2. $r = .49$ 4. $r = .39$</p>	<p>no serious limitations</p>	<p>D+</p>
<p>28. Shumski Thomas, 2018</p>	<p>cross-sectional survey (2-wave 1-week time lag) n=80</p>	<p>workers from a construction materials company in the southeast United States</p>	<ol style="list-style-type: none"> 1. The presence of individuals with a higher job level is positively related to surface acting during workplace meetings for those with a lower job level. 2. Surface acting in meetings is negatively related to (a) perceptions of meeting psychological safety and (b) perceptions of meeting effectiveness. 	<p>1. not reported but most likely very low 2a. $r = -.33$ 2b. $r = -.38$ Bs reported are not standardised</p>	<p>small and very specific population</p>	<p>D+</p>

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<p>29. van Eerde, 2020</p>	<p>cross-sectional survey and qualitative analyses n=76, 86, and 83</p>	<p>South African, Dutch and Pakistani workers</p>	<ol style="list-style-type: none"> 1. In a clock time culture,* people describe lateness to meetings NOT more frequently in terms of specific time intervals that need to be adhered to than in an event time culture. 2. In an event time culture, people describe lateness to meetings NOT more frequently with reference to other people or an event than in a clock time culture, BUT reacted differently in relation to the arrival of other members. 3. In an event time culture, larger timeframes of lateness to a work appointment are acceptable than in a clock time culture. 4. The difference in lateness norm in waiting for a high-status versus a low-status person is lower in a clock time culture than in an event time culture. <p>*A culture may be characterised by having clock time or event time. In clock time cultures, activities are scheduled and determined by the clock (“It is 6 o’clock, it is time to eat”). Clock time cultures are more common in Anglo-Saxon cultures, Protestant countries, individualistic cultures, or more broadly ‘the Western world’. In contrast, event time cultures depend on how social events shape the beginning, duration, and ending of activities (“Now that we met in the street, let’s eat”). Event time cultures are more common in non-Western countries, in particular Islamic countries.</p>	<p>only frequencies are provided</p>	<p>D</p>
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Productive meetings: an evidence review

<p>30. Yoerger, 2012</p>	<p>cross-sectional survey n=261</p>	<p>working adults in the US</p>	<ol style="list-style-type: none"> 1. Participation in decision-making in meetings (PDM)* is positively related to work engagement.** 2. Perceived supervisor support moderates the relationship between PDM and work engagement, such that there will be a stronger, positive relationship when perceived supervisor support is high. 3. Meeting load moderates the relationship between PDM and work engagement, such that the positive relationship is stronger when meeting load is low. <p>* The degree to which employees are allowed or encouraged to share their thoughts, feelings, and ideas in the formal meeting setting.</p> <p>** The authors use the term 'employee engagement', but the measurement used was the Utrecht Work Engagement Scale.</p>	<p>1. $r=.25$</p>	<p>convenience sample</p>	<p>D</p>
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Excluded studies

1st author and year	Reason for exclusion
1. DiCicco, 2019	Qualitative, explorative study
2. Geimer, 2015	Qualitative, explorative study
3. Hinkin, 2003	Not an empirical study
4. Kahai, 2003	Study examined effects of leadership style, anonymity and rewards in the context of an (unspecified) electronic meeting system - is most likely outdated
5. Kangasharju, 2009	Qualitative study, but relevant for the identification of possible cross-cultural differences
6. Kemp, 2013	Qualitative study, but relevant for the identification of possible cross-cultural differences
7. Köhler, 2012	Qualitative study, but relevant for the identification of possible cross-cultural differences
8. Köhler, 2015	Chapter in <i>The Cambridge Handbook of Meeting Science</i>
9. Mrozz, 2018	Variable measures do not concern meeting satisfaction or meeting effectivity
10. Standaert, 2021	Descriptive study that aims to examine the relationship between meeting objectives and meeting mode capabilities, but data is based only on the opinion/judgement/experiences of the organisers of the business meeting (rather than the participants and outcomes) and this person is usually the one that selects a meeting mode.
11. Standaert, 2022	Not an empirical study, essay/opinion piece with recommendations based on the author's own research



CIPD

The Chartered Institute of Personnel and Development
151 The Broadway London SW19 1JQ United Kingdom
T +44 (0)20 8612 6200 **F** +44 (0)20 8612 6201
E cipd@cipd.co.uk **W** cipd.org

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